L11: Entry 5 of 26 File: USPT Oct 5, 1999

DOCUMENT-IDENTIFIER: US 5961846 A
TITLE: Concentration of waterborn and foodborn microorganisms

DEPR:
Keeping these factors in mind, and noting that the potentially contaminated fluid will generally be aqueous in nature, it may in some cases be desirable to dilute the fluid medium with water to decrease its density and viscosity and thus enhance the sedimentation rate of pathogens. Further, where the pathogens of interest are smaller and/or less dense, increased centrifuge speeds and/or decreased flow rates will be of assistance in settling greater amounts of pathogens from the fluid. The densities of common food/waterborne pathogenic organisms (e.g., those listed at the outset of this disclosure) are generally greater than water, ranging between approximately 1.01-1.10 g/ml. The pathogenic protozoans generally range in size between approximately 1-15 .mu.m, whereas the pathogenic bacteria are smaller, ranging from approximately 0.5-2 .mu.m. However, it is notable that most of the aforementioned pathogenic organisms will often be found in water and fluid food in association with particles which are heavier than water (i.e., they bind or cling to such particles), particularly in the case of food particles. Therefore, in many cases, the size and density of the pathogens will not have a significant effect on organism recovery.

Other Intestinal Amebae (nonpathogenic)

- ***Entamoeba hartmanni***
  - small race ***Entamoeba histolytica***
  - cysts:<10µm (6-9 µm)
  - trophs: do not ingest rbc's
    - nuclear peripheral beading is slightly coarser

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INTESTINAL PROTOZOA

Lumen-Dwelling Protozoa

Flagellates:
- *Giardia lamblia*
- *Dientamoeba fragilis*
- *Chilomastix mesnili*
- *Enteromonas hominis*
- *Retortamonas intestinalis*
- *Trichomonas hominis*
- *Trichomonas tenax* (oral)
- *Trichomonas vaginalis*

Ameba:
- *Entamoeba histolytica*
- *Entamoeba dispar*
- *Entamoeba coli*
- *Entamoeba hartmanni*
- *Entamoeba polecki*
- *Entamoeba gingivalis* (oral)
- *Endolimax nana*
- *Iodamoeba bütschlii*

Apicomplexa:
- *Cryptosporidium parvum*
- *Cyclospora cayetanensis*
- *Isospora belli*

Microsporidia:
- *Enterocytozoon bieneusi*
- *Encephalitozoon intestinalis*

Other:
- *Blastocystis hominis*
- *Balantidium coli*

Numerous protozoa inhabit the gastro-intestinal tract of humans (see Box). This list includes representatives from many diverse protozoan groups. The majority of these protozoa are non-pathogenic commensals, or only result in mild disease. Some of these organisms can cause severe disease under certain circumstances. For example, *Giardia lamblia* can cause severe acute diarrhea which may lead to a chronic diarrhea and nutritional disorders; *Entamoeba histolytica* can become a highly virulent and invasive organism that causes a potentially lethal systemic disease. Apicomplexa and microsporidia species (discussed elsewhere), which normally do not evoke severe disease, can cause severe and life-threatening diarrhea in AIDS patients and other immunocompromised individuals. *Trichomonas vaginalis* does not reside within the gastro-intestinal tract, but is often discussed with the intestinal flagellates. It infects the urogenital tract and and causes a sexually-transmitted disease.

Intestinal protozoa are transmitted by the fecal-oral route and tend to exhibit similar life cycles consisting of a cyst stage and a trophozoite stage (Figure). Fecal-oral transmission involves the ingestion of food or water contaminated with cysts. After ingestion by an appropriate host, the cysts transform into trophozoites which exhibit an active metabolism and are usually motile. The parasite takes up nutrients and undergoes asexual replication during the trophic phase. Some of the trophozoites will develop into cysts instead of undergoing replication. Cysts are characterized by a resistant wall and are excreted with the feces. The cyst wall functions to protect the organism from desiccation in the external environment as the parasite undergoes a relatively dormant period waiting to be ingested by the next host.

Typical Fecal-Oral Life Cycle

Diagnostic Findings

[Last Modified: 07/09/2001 23:20:46]

Blastocystis hominis infection

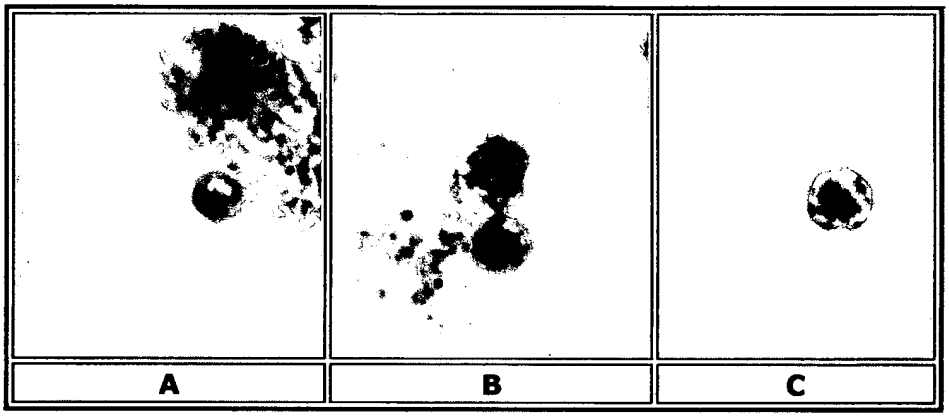
[Blastocystis hominis]

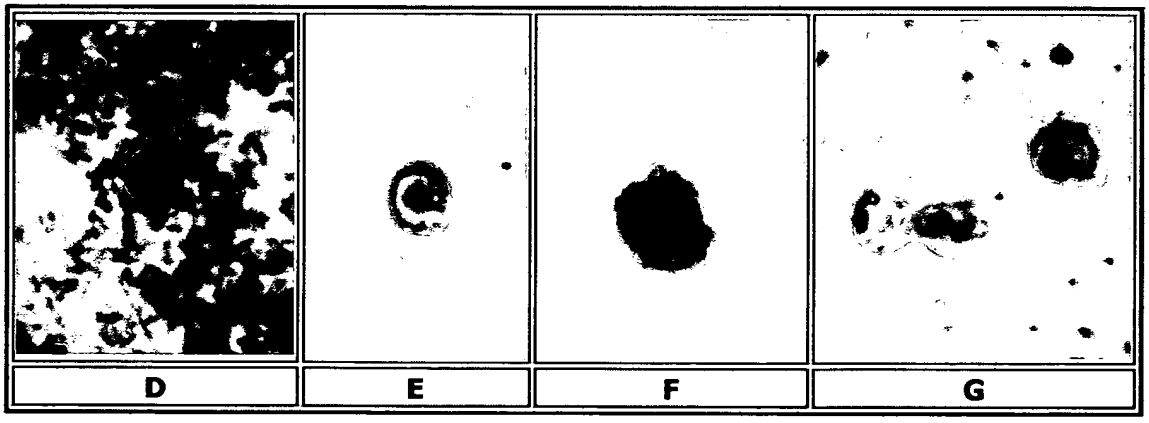
Causal Agent | Life Cycle | Geographic Distribution | Clinical Features | Laboratory Diagnosis | Treatment

Microscopy

Blastocystis hominis appear as spherical to oval cyst-like structures. They can vary widely in size (5 to 30 µm; usual range 8 to 10 µm), and typically consist of a central body, or "vacuole" surrounded by a thin rim of cytoplasm containing up to six nuclei.

Images **A-G** below show *Blastocystis hominis* stained in trichrome. The sizes vary from 4 µm (**A**) to 10 µm (**F**). The vacuoles stain variably from red to blue. The nuclei in the peripheral cytoplasmic rim are clearly visible, staining purple, in image **C** (4 nuclei) and **F** (5 nuclei). (Specimens contributed by Dr. Ray Kaplan, SmithKline Beecham Diagnostic Laboratories, Atlanta, GA.)





Medical Protozoology (1995)

Editor : ***Assistant Professor Dr. Darawan Wanachiwanawin***

Content :

Medically Important Protozoa

- **Flagellates**
  - **Subphylum: Mastogophora**
  - **Class: Zoomastigophora**
  - **Locomotion: 1-4 flagella**
  - **Reproduction: longitudinal binary fission**
- **Ciliates**
  - **Phylum: Ciliophora**
  - **Locomotion: cilia of surface**
  - **Reproduction: transverse binary fission**

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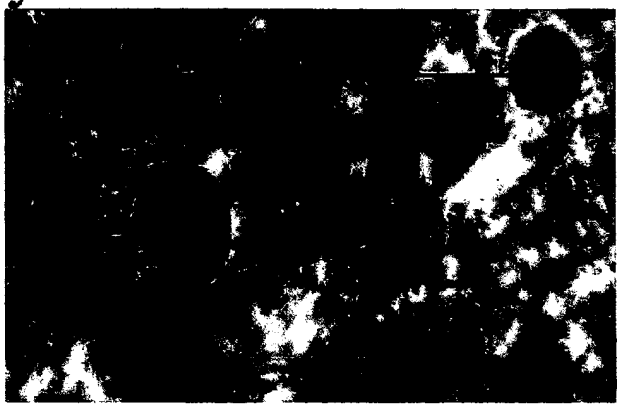
Blastocystis hominis

- Central body form, 5-30 μm
- large vacuole in center
- nuclei in periphery around vacuole
- may be seen in the stool
- pathogenicity undetermined



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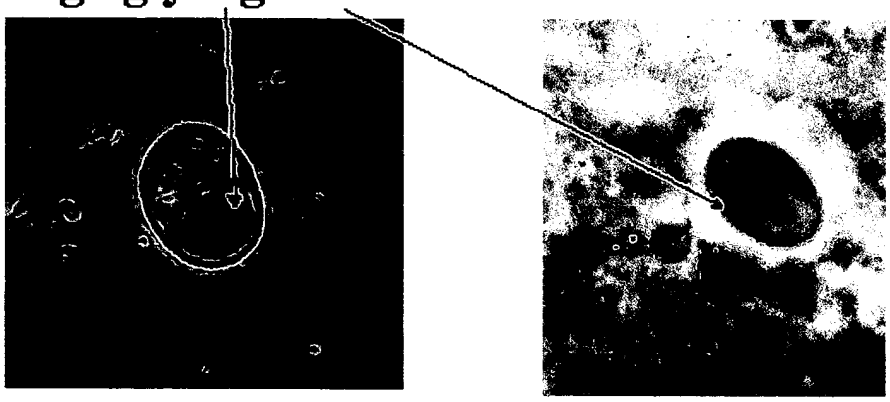
Iodamoeba butschlii cyst

- 6-9 μm, round to pear-shaped
- one nucleus
- large glycogen vacuole



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Endolimax nana cyst

- **Round or oval, 6-9 μm**
- **1-4 nuclei**

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Medically Important Protozoa

- **Amoebae (Amebae)**
  - **Subphylum: Sarcodina**
  - **Superclass: Rhizopoda**
  - **Class: Lobosea**
  - **Locomotion: use pseudopodia**
  - **Reproduction: random binary fission**

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DB Name	Query	Hit Count	Set Name
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USPT	refractile	530	L18
USPT	floxin$ not l16	19	L17
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USPT	l13 and protoz$	75	L14
USPT	itraconazole$ not l12	377	L13
USPT	sporanox	7	L12
USPT	penis same pus$ not l10	149	L11
USPT	penis same pus!	5	L10
USPT	l7 and l8	1	L9
USPT	hyphal or hyphi$	456	L8
USPT	amebia or ameboid or ameb$	768	L7
USPT	diamond same cyst same ameboid	0	L6
USPT	ameboid$ same hyphal	0	L5
USPT	ameb$ same hyph$	0	L4
USPT	spher$ near5 cyst$	13	L3
USPT	contractile near5 cyst$	0	L2
USPT	contractile near3 cyst$	0	L1

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Derwent World Patents Index
IBM Technical Disclosure Bulletins

Refine Search: Clear

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Today's Date: 7/9/2001

In vitro encystment and experimental infections of Blastocystis **hominis.**

Suresh K; Ng GC; Ramachandran NP; Ho LC; Yap EH; Singh M

Department of Microbiology, Faculty of Medicine, National University of Singapore, Kent Ridge.

Parasitology research (GERMANY) 1993, 79 (6) p456-60, ISSN 0932-0113 Journal Code: PRE

Languages: ENGLISH

Document type: Journal Article

Record type: Completed

Subfile: INDEX MEDICUS

Cultures of **Blastocystis** hominis were induced to encyst using three encystation media: (a) an encystation medium (EM) comprising yeast extract in buffered saline containing 50% horse serum, (b) an encystation medium (CEM) comprising EM conditioned with bacterial soluble products and (c) an encystation medium (TEM) containing 0.5% trypticase in EM. Two isolates of B. hominis were studied, an axenized isolate C and a non-axenized isolate MS. In EM, isolate C did not encyst, whereas 6.1% of isolate MS had encysted by day 1. However, in CEM and TEM, 17.4% and 25.7% of isolate C, respectively, had encysted by day 5. In all three media, isolate MS encysted more readily than isolate C, with as much as 91.7% of the former encysting in TEM. As viewed by phase-contrast microscopy, cyst-like stages appeared highly **refractile** . Direct stool examination of juvenile Wistar rats infected with 10,000 cyst-like stages of both C and MS isolates showed **Blastocystis** at day 2 post-infection. At autopsy on day 7, large numbers of **Blastocystis** were seen in the cecum, with smaller numbers being observed in the large intestine. In contrast, rats fed with various inocula of the vacuolar stages of isolates C and MS did not become infected, indicating the importance of the encysted stages in th

Opportunistic gastro-intestinal infections in HIV positive patients

INFECTIONS GASTRO-INTESTINALES OPPORTUNISTES CHEZ LES PATIENTS VIH POSITIFS

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Medecine et Hygiene (MED. HYG.) (Switzerland) 31 JAN 2001, 59/2332 (254-261)

CODEN: MEHGA ISSN: 0025-6749

DOCUMENT TYPE: Journal ; Review

LANGUAGE: FRENCH SUMMARY LANGUAGE: ENGLISH

NUMBER OF REFERENCES: 109

In industrial countries, a marked decrease of the mortality as well as morbidity of opportunistic gastrointestinal infections in HIV positive patients has been noted, as a result of highly active antiretroviral therapy. Long lasting remission or even cure can be achieved due to restauration of the immun system. Most gastrointestinal symptoms are currently caused by the antiretroviral therapy itself. Esophageal candidiasis is the most frequent opportunistic infection of the gastrointestinal tract. In HIV-positive patients suffering from diarrhea of unknown origin, colonoscopie allows final diagnosis in two third of these patients. Most frequent pathogens diagnosed by this way are CMV, amebia and leishmania. Antibiotherapy of opportunistic infections implies knowledge of drug side effects and interactions, in particular with other antibiotics and with antiretroviral medications.

Chemotherapy and immunity in opportunistic parasitic infections in AIDS

Zumla A.; Croft S.L.
Center for Infectious Diseases, University of Texas, Health Science Center, 6431 Fannin,Houston, TX United States

Parasitology (PARASITOLOGY) (United Kingdom) 1993, 107/SUPPL. (S93-S101)
CODEN: PARAA ISSN: 0031-1820
DOCUMENT TYPE: Journal; Review
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH

Parasitic diseases are endemic in parts of the tropics, but there is no convincing evidence that their prevalence or incidence is increasing due to the HIV epidemic. Available scientific data on parasitic infections in patients with the Acquired Immunodeficiency Syndrome (AIDS) suggests a predominance of Pneumocystis carinii, Toxoplasma gondii and Cryptosporidium spp. For reasons which are unclear, parasitic infections such as Plasmodium falciparum, Strongyloides stercoralis and Entamoeba histolytica, where cell-mediated immune responses are also thought to be significant, do not appear to be opportunists of importance. It is being increasingly recognized that chemotherapy for parasitic diseases has a host-dependent component, although scientific data on this subject remain scanty. The management of opportunistic parasitic infections in patients infected with HIV is dogged by failures and relapses, aptly illustrating the notion of the relationship between chemotherapy and the immune response. This review discusses the immunity and chemotherapy of opportunistic parasite infections in patients infected with the Human Immunodeficiency Virus (HIV).

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S8          0   (S1 OR S2) AND GENTIL?
S9          0   (S1 OR S2) AND URETH?
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              FLOXACIN?)
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A medium chain triglyceride-based diet in patients with HIV and chronic diarrhea reduces diarrhea and malabsorption: a prospective, controlled trial.

Wanke CA; Pleskow D; Degirolami PC; **Lambl BB** ; Merkel K; Akrabawi S

Division of Infectious Diseases, New England Deaconess Hospital, Boston, Massachusetts 02215, USA.

Nutrition (UNITED STATES) Nov-Dec 1996, 12 (11-12) p766-71, ISSN 0899-9007 Journal Code: BEU

Languages: ENGLISH

Document type: Clinical Trial; Journal Article; Randomized Controlled Trial

Record type: Completed

Subfile: INDEX MEDICUS

Our objective was to determine whether a medium-chained triglyceride (MCT)-based diet, compared to a long-chain triglyceride (LCT)-based diet, conveys a beneficial effect on diarrhea and fat malabsorption in human immunodeficiency virus (HIV)-infected individuals with chronic diarrhea and weight loss. A secondary objective was to evaluate the pathogens associated with the diarrhea and to evaluate whether the etiologic agent was a determinant of response to the nutritional intervention. Prospective, randomized double-blind comparative trial was conducted in 24 adult patients with HIV, diarrhea of greater than 4-wk duration, fat malabsorption, and loss of 10-20% of ideal body weight, these patients were recruited from our outpatient infectious disease clinic. Evaluations of diarrheal pathogens were made by complete stool examination, upper and lower endoscopy with quantitative culture, and biopsy. Body composition determinations, and measurements of fat, carbohydrate, and vitamin absorption pre- and postintervention. Patients were randomly assigned to one of two complete nutritional products with either medium- or long-chain triglyceride fat exclusively for 12 d followed by treatment of infectious pathogens. Ten patients were found to have Microsporidium and 9 patients had no identifiable pathogen. All patients responded to intervention with both nutritional products overall with 45% fewer stools, decreased stool fat and weight, and a significant increase in urine nitrogen. The group that received the MCT product demonstrated significantly decreased stool number (mean 4 to 2.5), stool fat (mean 14 to 5.4 g), and stool weight (mean 428 to 262 g) compared with baseline ($P < 0.01$ for all). Patients with both species of microsporidia and with pathogen negative diarrhea had good response. We found that HIV patients with diarrhea, regardless of etiology, and documented fat malabsorption may benefit symptomatically from a diet composed of an MCT-based liquid supplement.

Tags: Human; Male; Support, Non-U.S. Gov't